

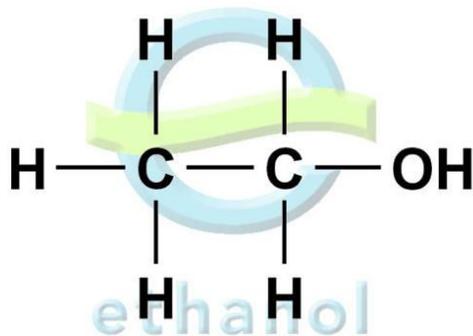
Energy Conversion Systems



Background Narrative

At the beginning of the twentieth century, flowing water, coal and oil generated electric power, and our automobiles ran on gasoline. At that time, the supplies of oil and coal seemed limitless; we could always find more by simply looking for it. However, at the end of the twentieth century, the situation is very different. The production of oil in the United States is declining. There is ample coal, but serious pollution concerns are connected with it, and the public has turned against nuclear power. This concern has sparked a high level of interest in using the fuels we have now more efficiently, as well as tapping into new sources of energy. Enormous sums of money are being spent on fuel cells because of their very high efficiency. Increasing expenditures are also being spent on converting solar, wind and biomass energy to electrical energy.

In this section, the students will study the many different sources of energy and distinguish between renewable and non-renewable energy sources. The students will also study the tradeoffs between the economic and environmental impacts on the selection of a power source. As the section develops, students will investigate the many different career opportunities involved in the production and application of power sources.



Activities:

1. In teams, the students will use available resources to research and create a display for a form of energy. The display will address the energy form chosen or assigned, its development, whether it is renewable or nonrenewable, and its impact on the environment.

2. Students will build one or more of the following projects to demonstrate the conversion of energy to work.

- [spinning tops](#)

Note: Depending on which activities students/teacher choose, you will have to order the appropriate equipment and supplies found on the supply list.

3. Using the Internet, students in groups of two will search teacher defined sites to locate information and report back to the class on occupations in the field of energy. Students will present their findings on educational requirements, job availability, and salaries to the class

Vocabulary

Agricultural Age: The period in history when most people in the World worked on farms.

Biomass: The remains or byproducts of living things that can be used to produce fuel.

Chemical Energy: Energy that is stored in a substance and released during a chemical reaction.

Electrical Energy: Energy associated with electrons moving along a conductor.

Finite: Having limits or bounds.

Fossil Fuels: Fuels, such as coal, oil, and natural gas, which are formed from fossilized remains of plants or animals.

Geothermal: Having to do with the internal heat of the earth.

Human and Animal Muscle: The tissue of the body of people and animals that can be tightened or loosened to make the body move.

Industrial Revolution: The great social and economic changes due to the introduction of machine and power tools and large-scale industrial production.

Information Age: The current period in history when the economy is more dependent on information than it is on natural resources and agricultural products.

Light: A form of radiant energy that can be perceived by the human eye. It is made up of electromagnetic waves that travel approximately 186,000 miles per second.

Magnetism: The properties of attraction or repulsion possessed by magnets.

Mechanical: A form of energy that uses motion to do work.

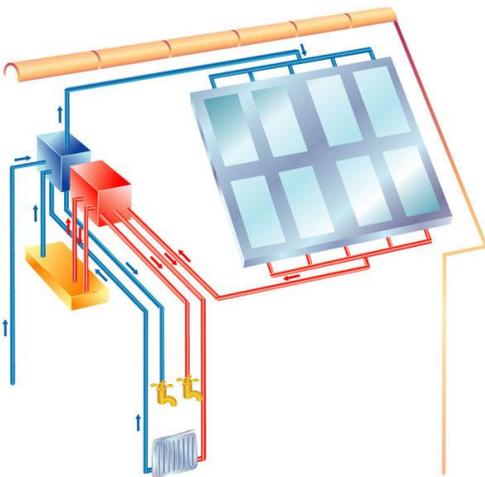
Nonrenewable: Can't be replenished once the supply is gone.

Nuclear: Having to do with energy derived from the splitting (fission) or combining (fusion) of atoms.



Solar: Having to do with the sun as a source of light and heat energy.

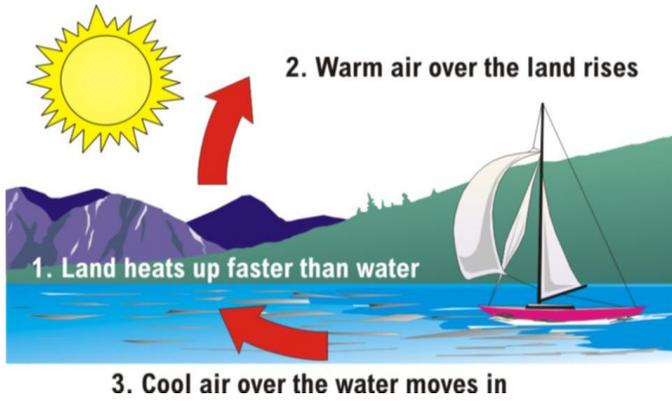
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Thermal: Having to do with heat or the transfer of heat.

Water Flow: The flow or current of water.

Wind: Air movement caused as the result of the uneven heating and cooling of the earth's surface.



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